

REMARKS

Claims 1-23 are pending in the application. Claims 2, 8 and 11 are amended and newly submitted claims 20-23 are presented for examination.

It is indicated in the Office Action that claims 3, 4, 11 and 16-19 would be allowable if rewritten in independent form to include the features of the base claim and any intervening claims. This indication of allowable subject matter is noted with appreciation.

In the outstanding Office Action claims 1, 2, 5-8 10 and 12-15 were rejected under 35 U.S.C §103(a) as being unpatentable over Harmony (U.S. Patent No. 3,899,136) in view of Bulushek (U.S. Patent No. 4,756,339). Claims 9 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Harmony in view of Bulushek, and further in view of Hunter (U.S. Patent No. 4,226,368).

Claim 1

Reconsideration and withdrawal of the rejection are respectfully requested since the combination of Harmony and Bulushek fails to disclose, teach or suggest all the features of the invention as recited in independent claim 1.

The invention as recited in claim 1 is an extruded pipe connectable to a pressurized fluid source via a first end of the pipe. The pipe includes a drip-irrigation plug emitter mounted integrally therein during the extrusion process of the pipe. The plug emitter has an inlet in fluid communication with the first end of the pipe, a drip outlet in fluid communication with a second end of the pipe, and a flow-restricting path therebetween. The emitter plugs the pipe with respect to any fluid flow except for the flow through the flow-restricting path.

Harmony discloses an emitter for irrigation systems. As illustrated in FIGs. 1 and 2 of Harmony, emitter 10 includes an envelope 36 (though not extruded).

Bulushek discloses an irrigation pipe with an emitter (though not a plug emitter) mounted during extrusion.

The combination of Harmony and Bulushek fails to disclose, teach or suggest a “drip-irrigation plug emitter mounted integrally therein during the extrusion process of the pipe” as recited in independent claim 1 of the present application. It is admitted in the Office Action that Harmony fails to disclose an “emitter mounted integrally... during the extrusion process” as recited in claim 1. It is however argued in the Office Action that Bulushek teaches an irrigation pipe with an emitter mounted during extrusion and it would therefore be obvious to one of ordinary skill in the art at the time of the invention was made to have made the device of Harmony by extrusion as taught by Bulushek.

It is respectfully submitted that there is no motivation to combine Harmony with Bulushek. Harmony teaches a plug emitter 10 comprising halves 20-21 held together by an envelope 36. The emitter 10 is plugged into a fluid source (T-connector 2 in Fig. 1). Harmony does not provide any motivation for mounting the halves 20-21 of his emitter into the envelope 36 by an extrusion process as in Bulushek. Quite to the contrary, as the envelope 36 in Harmony has a bead 44 on its edge, it would be extremely difficult (if at all possible) to produce such an envelope by extrusion. Furthermore, as seen from the description in Harmony, col.3, lines 20-25, and Figs. 2-4, the halves 20 and 21 are not held together without the envelope 36. An emitter consisting of two loose halves is also very difficult to be inserted in an extruded pipe during the extrusion.

Moreover, if an average person skilled in the art would seek solution of some problem related to the plug emitter of Harmony, he would not resort to an entirely different technology such as pipe extrusion. The reason is, the plug emitter is a single emitter in a branch of the irrigation conduit,

while pipe extrusion technology is designed for production of long, potentially endless pipes, with plurality of emitters inside, or a long and equally endless emitter as shown in Bulushek.

Thus, Harmony rather teaches away from inserting his plug emitter into an extruded pipe during the extrusion.

Therefore, combining the plug emitter of Harmony with the extrusion mounting of Bulushek may be considered obvious only knowing the present invention, i.e. in hindsight.

In view of the above, it is respectfully submitted that Claim 1 is patentable over Harmony in view of Bulushek.

Claim 2

Claim 2 sets forth an extruded pipe constituting a section of a continuous long pipe comprising a plurality of such sections. Amended Claim 2 is clarified by adding to original Claim 2 that the extruded pipe is a plugged section resulting from cutting a continuous long pipe. This is evident at least from Figs.1 and 2.

It is submitted that amended Claim 2 is patentable at least as depending on a patentable claim.

With respect to Claim 2, the Examiner alleged that cutting a continuous long pipe into a plurality of sections is an obvious matter in order to provide a plurality of emitters.

Cutting of a long pipe produced by extrusion, with a plurality of the plug emitters of Claim 1, might be obvious if such long pipe were known. Indeed, there would be no other way to obtain the plugged pipe of Claim 1 from such a long pipe. However, the claimed matter of Claim 2 is not the process of cutting but the pipe of Claim 1 obtained in a specific way - first, by extrusion together with the plugging emitters, then by cutting into plugged sections.

Cutting any other known long extruded pipe with other kind of emitters (for example that of Bulushek) will not result in the plugged pipe of Claim 2. It would require at least additional plugging.

It is therefore submitted that amended Claim 2 is also independently patentable.

Claims 5-7

Claims 5-7 are deemed patentable at least as depending on a patentable claim.

Apart from that, Claim 5 sets forth an extruded pipe wherein the pipe and plug emitter are adapted to be cut together. Neither Harmony nor Bulushek describes a pipe with a plug emitter adapted to be cut together, as defined in Claim 5. The plug emitter 10 of Harmony is clearly not fit for such cutting (pressurized water would escape via cut passages 34 and 35).

It is therefore submitted that Claim 5 is also independently patentable.

Claim 8

Claim 8 sets forth a drip-irrigation plug emitter for mounting inside an extruded pipe. Amended Claim 8 specifies that the plug emitter is integral in itself without being mounted in the extruded pipe. This is readily seen in all drawings of the application showing emitters made of a single piece of material. It is also provided that the plug emitter may be assembled (page 6, line 28 of the specification). This feature is necessary for the mounting during extrusion of the pipe, as defined in Claim 1.

Contrary to the amended claim 8, Harmony teaches an emitter 10 comprising two loose halves 20 and 21 before mounting in the pipe (envelope 46).

It is therefore respectfully submitted that Claim 8 is patentable over Harmony in view of

Bulushek.

Claim 9

Claim 9 is deemed patentable at least as dependent on a patentable claim.

Furthermore, Claim 9, as dependent on amended claim 8, sets forth an integral drip-irrigation plug emitter, adapted for mounting inside an extruded pipe, and further having a filter means disposed upstream of a flow labyrinth.

As stated above, the combination of Harmony and Bulushek fails to disclose, teach or suggest a “drip-irrigation plug emitter mounted integrally therein during the extrusion process of the pipe” as recited in independent claim 1 of the present application. Hunter fails to cure the deficiencies of Harmony and Bulushek.

Thus, the combination of Harmony, Bulushek and Hunter fails to disclose, teach, or suggest a drip-irrigation plug emitter mounted integrally therein during the extrusion process of the pipe with a filter means disposed upstream of a flow labyrinth.

Claim 10

Claim 10 is deemed patentable at least as dependent on a patentable claim.

Furthermore, Claim 10 sets forth a drip-irrigation plug emitter with a flow labyrinth symmetric relative to the direction of flow therethrough to an extent that the flow inlet may be used as a drip outlet and vice versa. Neither Harmony nor Bulushek teaches a plug emitter with symmetric flow-restriction path that may be used both ways with respect to the flow direction. Symmetric emitters are easier to install during the extrusion process because they do not need to be aligned in the manufacturing process on their way from a feeder to the extrusion head.

It is therefore submitted that Claim 10 is also independently patentable.

Claim 11

The Examiner's opinion on claim 11 is not quite clear in view of Sec. 3 and Sec. 4 of the Office Action.

Claim 11 sets forth a drip-irrigation plug emitter with two filter means placed at the two respective ends of a flow labyrinth.

As argued in Claim 9 above, the combination of Harmony, Bulushek and Hunter fails to disclose, teach, or suggest a drip-irrigation plug emitter mounted integrally therein during the extrusion process of the pipe with a filter means disposed upstream of a flow labyrinth.

In amended Claim 11, it is clarified that one integral filter means is disposed at each end of the flow labyrinth. This is seen in Fig. 5. Thereby the symmetric structure of the dripper in Claim 10 is completed with filter means. Thus, the feature of Claim 11 constitutes a mere duplication of the filter means in Claim 9 as applied to the symmetric structure of the dripper in Claim 10.

It is thus submitted that claim 11 is patentable at least as depending on a patentable claim.

Claim 12

Claim 12 is drawn to a method for extrusion of a continuous long pipe with a plurality of plug emitters.

According to the Examiner, it would be obvious to make the plug emitter in a tube of Harmony by extrusion as taught by Bulushek.

As explained in item 1 above, Harmony rather teaches away from using extrusion for production of a pipe with plug emitter.

Furthermore, it is quite natural to insert integral drip emitters in a continuously extruded pipe when the emitters allow continuous free passage of water along the pipe (in-line drip emitters). Such

pipe is used in long sections with many emitters per section, and each emitter allows the water to flow to the next one. On the contrary, it is quite unexpected to manufacture a continuous pipe where each emitter plugs the next one - the continuity of the pipe has no parallel in continuity of intended working flow. Such pipe is apparently unusable until cut into pieces, with one emitter in each piece.

Therefore, we believe that extrusion of a continuous long pipe with a plurality of plug emitters is not obvious from Harmony combined with Bulushek and may be considered obvious only knowing the present invention, i.e. in hindsight.

In view of the above, it is respectfully submitted that Claim 12 is patentable over Harmony in view of Bulushek.

Claims 13 and 14

Claims 13 and 14 are deemed patentable at least as depending on a patentable claim.

Claim 15

Claim 15 is deemed patentable at least as depending on a patentable claim.

Furthermore, Claim 15 sets forth an extruded pipe with means for fixing the second end of the pipe in a suitable position relative to an irrigated plant. Neither Harmony nor Bulushek mentions means for fixing the second end of the pipe relative to an irrigated plant. Therefore, it is submitted that Claim 15 is also independently patentable.

Claim 20

New claim 20 comprises the features of Claim 8 and a feature of Claim 7. It is deemed patentable at least as depending on a patentable claim.

Newly Submitted Claim 21

New independent claim 21 comprises all features of the extruded pipe in claim 1 and claim 4.

In the opinion of the Examiner, this combination is allowable.

Newly Submitted Claim 22

New independent claim 22 is drawn to a continuous long extruded pipe adapted to be cut into sections. It is based on the features of claims 1 and 2 and is shown in Fig.1.

Claim 22 is deemed patentable for the reasons set forth under items 1 and 2 above.

Newly Submitted Claim 23

New independent claim 23 is drawn to a continuous long extruded pipe adapted to be cut into sections, each section having the features of the extruded pipe in claims 1, 2 and 4. It is shown in Fig.1. In the opinion of the Examiner, the combination of features in claims 1 and 4 is allowable.

Claim 23 is also deemed patentable for the reasons set forth under items 1 and 2 above.

CONCLUSION

In light of the foregoing, Applicant submits that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

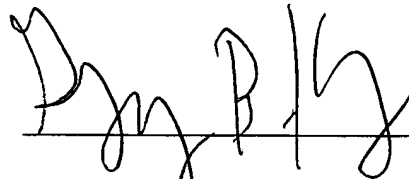
In the event this paper is not timely filed, Applicant petitions for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112. Favorable action with an early allowance of the claims is earnestly solicited.

Respectfully submitted,

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October 17, 2005

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